

# Chapter 15

## Designing a Relational Database Schema for a Kosovo Hospital Management System

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### **ABSTRACT**

*A relational database schema was designed for the Kosovo Hospital Management System. The objective was to create a platform to store patient information, appointments, billing, and feedback, with the main goal of improving patient care. Eleven unique tables were created, with primary and foreign keys defining the relationships between them. Through the tables it is possible the management of patient and doctor schedules, medical records, allergies, blood donations, medical equipment, and hospital department administration, among others. The management system benefits all healthcare institutions such as hospitals, clinics, and blood banks, as well as medical staff such as doctors and nurses. Patients can also benefit from this by providing better healthcare services, faster appointment scheduling, and more.*

### **INTRODUCTION**

We want to make a management system for healthcare institutions, especially for hospitals. Our main objective is to improve the quality of patient care. Our project offers a platform that stores patient information, appointments, billing, and feedback. Healthcare workers may manage patient information such as medical history, allergies, prescriptions, and other essential information with this system in a very convenient way (K. Hedau et. al.,2018). The project will also allow patients and healthcare professionals to schedule and manage appointments. However, we offer different ways to store information for other stuff such as medical equipment (C. C. Batbagon et. al.,2018). We created 11 unique tables that are of course, related to each other in different ways (please check DBMS diagram for more information about the relationships between tables). Here are some of the functions that we are trying to provide based on our 11 tables:

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- Managing patient and doctor schedules when creating a scheduling system for medical appointments.
- Create a patient database system that stores patient information, medical records, and test results.
- Create a system for managing doctor schedules and wages by tracking physicians' schedules and their wages (K. Cincar et. al.,2019).
- Create a blood donation management system that keeps track of donors and their donations.
- Create a medical equipment inventory management system that tracks equipment usage and up-keep (Guha, A. et. al., 2023).
- Create a patient feedback system that captures patient input and improves healthcare services.
- Handling patient invoices and payment data in a billing and payment system for medical establishments.
- Create a system for monitoring allergies in patients by tracking allergies and allergic responses (T. O. Paulussen et. al.,2006).
- Create a hospital department administration system that organizes departments and their staff personnel (S. Rupp et. al.,2019).

We believe that healthcare institutions such as hospitals, clinics, and blood banks would benefit from this initiative, as will medical personnel such as doctors and nurses who will be able to use the technologies to manage their job more efficiently (Jain, A. et. al., 2023). These technologies can also assist patients by providing better healthcare services, faster appointment scheduling etc.

## LIST OF TABLES

This is an overview of our tables. Primary keys are noted with the yellow color and foreign keys are noted with green. Figure 1 shows an overview of tables created for the project. Figure 2 shows a DBMS diagram showing the different relationships between tables.

Figure 1. An overview of tables created for the project

G_4A_PATIENTS_TABLE Data Type	patient_id varchar(15)	first_name varchar(20)	last_name varchar(20)	date_of_birth DATE	gender varchar(1)	phone varchar(15)	email varchar(30)	address varchar(50)	medical_condition varchar(100)
G_4A_DOCTORS_TABLE Data Type	doctor_id varchar(15)	first_name varchar(20)	last_name varchar(20)	specialization varchar(20)	phone varchar(15)	email varchar(30)	address varchar(50)	salary decimal(5,2)	schedule varchar(15)
G_4A_APPOINTMENTS_TABLE Data Type	appointment_id int	patient_id varchar(20)	doctor_id varchar(15)	appointment_date DATE	appointment_time TIME	purpose varchar(20)			
G_4A_DEPARTMENTS_TABLE Data Type	department_id int	department_name varchar(20)							PRIMARY KEY
G_4A_MEDICATIONS_TABLE Data Type	medication_id int	medication_name varchar(40)	dosage varchar(20)	instructions varchar(100)	patient_id varchar(15)				FOREIGN KEY
G_4A_BILLING_INFO Data Type	bill_id int	patient_id varchar(15)	date DATE	total_amount decimal(5,2)	payment_method varchar(20)	status varchar(20)			
G_4A_PATIENT_FEEDBACK Data Type	feedback_id varchar(15)	patient_id varchar(15)	date DATE	feedback_type varchar(10)	feedback_message varchar(100)				
G_4A_MEDICAL_EQUIPMENT Data Type	equipment_id varchar(20)	equipment_name varchar(30)	manufacturer varchar(30)	model varchar(30)	serial_no int	purchase_date DATE			
G_4A_PATIENT_ALLERGIES Data Type	patient_id varchar(15)	allergy_id varchar(15)	allergy_name varchar(30)	allergy_type varchar(20)	allergy_severity varchar(30)				
G_4A_BED_ASSIGNMENT Data Type	patient_id varchar(15)	bed_no int	admission_date DATE	discharge_date DATE					
G_4A_BLOOD_DONORS Data Type	donor_id varchar(15)	donor_name varchar(20)	donor_age int	blood_type varchar(5)	donor_email varchar(30)	last_donation_date DATE			

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